

# :- The Mystery of Rabies---Timely Topics for the Dog Days :-

BY JOHN ELPRETH WATKINS.

THE return of dog days suggests an inquiry into the medical question: "Is hydrophobia a myth?" Perennially our popular prints publish doubts and denials that such a disease exists. So it occurred to me yesterday to invade that vast repository of medical lore, the library of the surgeon-general, the greatest medical library of our hemisphere, and inquire for the past decades about respectable literature purporting to prove the nonexistence of rabies. But as soon as I crossed the threshold of this storehouse of knowledge I crashed against the hard, cold fact that no literature disputing the hydrophobia hypothesis is now deemed respectable by publishers whose press grinds out pamphlets for the consumption of the up-to-date medico. It surprised me to learn that no sane literature had come within the ken of the industrious indexers who year after year have sifted all medical lore, foreign and domestic, book and periodical, and have catalogued it for the convenience of guardians of the public health. Such writers as have gone after hydrophobia hammer and tongs in the newspapers and popular magazines were, I was assured, either nature fakers or dog fanciers. Men of medical training would not touch the existence of smallpox or of lockjaw as dispiriting the actuality of rabies! Indeed, the very first official whom I approached for aid described a case of rabies which he had treated at one of our army posts.

If there be one place where every beat of the realm is known, inside and out, from muzzle end to tip of tail, it is that great veterinary board of health within the Federal Government—the Bureau of Animal Industry. Every veterinarian upon the faculty of this busy institution believes as implicitly in hydrophobia and its communicability to man as he does in the existence of tuberculosis and the possibility of its infecting the human species through the medium of infected milk. Concerning hydrophobia, Dr. A. D. Melvin, chief of the bureau, has this to say:

**Noted Veterinarian's Opinion.**  
"Although some scepticism in this disease persists and is industriously fostered by the publication of erroneous views, the reality and the infectious nature of the malady have been abundantly established and confirmed by the work of numerous competent scientific investigators. There is no more reason for doubting the existence of rabies than for questioning the actuality of other specific and well recognized contagious diseases."

Three other veterinarians who have made careful studies of rabies are equally emphatic. If not more so, Dr. John B. Mobler, chief of the bureau's pathological division, makes this statement:

"There is no greater galaxy of names associated with the study of any of the infectious diseases than is connected with the experimental investigation of rabies. The ablest scientists who have adorned the medical and veterinary professions, and to whom we owe the greatest debt for having advanced our knowledge of contagious diseases, have repeatedly shown by their experiments that rabies is a specific, communicable disease, pre-eminently affecting the canine race, although all warm-blooded animals, including man, are susceptible to it."

**Known Many Centuries B. C.**  
"Many years of impatient scientific research have been required to lead these investigators to a clear comprehension of the nature and characteristics of this disease. It was known and described several centuries prior to the beginning of the Christian era, and from the dawn of history the disease has been feared and dreaded. But it has been only in comparatively recent years that we have arrived at a tolerably clear understanding of the facts concerning this disease, which have to a certain degree displaced many of the fallacies and superstitions that have had a strong hold upon the public mind for many years."

The superintendent of the bureau's

experiment station, Dr. E. C. Schroeder, says:

"A deliberate denial of the existence of rabies means one of two things—either a lack of information or an impairment of the honesty or of the investigator. Those whose denial is based on a lack of information, if they are at all open to conviction, will change their minds after examining what has been written on the subject by men who are above the reproach of an attempt to malign the canine species. To those who have never seen rabies, and for that reason can not be convinced of its existence, it can only be said that not to be acquainted with a thing through personal experience, not to have seen or encountered it, not to have knowledge of it through our senses, means nothing but ignorance relative to the thing in question."

And this I have from Dr. George H. Hart, a member of the bureau's faculty, who has made a study of the malady:

"In spite of all the work that has been done on rabies there are still many persons, including some medical men, who are skeptical regarding its existence. Some physicians say that they have been practicing fifteen, twenty or thirty years and have never seen a case, but this proves nothing. During the past fifteen years but three cases of the disease have occurred in human beings in Washington, D. C. It can be readily seen, therefore, that only a small percentage of the medical practitioners would see them."

**The Dogs of Constantinople.**  
"Others have advanced the statement that in Constantinople, where there are more dogs than in any other place of equal size in the world, rabies is unknown. This statement has been disproved by Remlinger, director of the Imperial Bacteriological Institute in that city, who reports many cases of the disease in Constantinople and adjoining provinces. But even if it were a fact, it is no more remarkable than the fact that in London, where there are more people than in any other place of equal size in the world, bubonic plague is unknown. The fact, however, is not remarkable at all. It simply means that the specific cause of the disease is not present in that particular locality."

**Victims of Fear Only.**  
"One fact these specialists will admit with admission you would term it 'certain neurotic individuals who have been bitten by healthy dogs become wrought up in morbid fear that develops into spurious rabies, known as 'lyssophobia' and always of a hysterical nature, accompanied by no organic lesions and always terminating in recovery. Observation of these cases by physicians and others who have never observed true hydrophobia, often, it is claimed, leads to the belief that all cases of supposed hydrophobia in human beings are of this hysterical nature."

Such a case recently came to the attention of Dr. Mobler:

"A young man, twenty-four years of age, employed as a clerk in a dry goods store, was bitten on a Saturday morning by a watch dog belonging to the proprietor," said he. "The bite, which was slight, had been immediately cauterized and no further attention was given the incident until Wednesday morning, when the young man fainted at the counter."

"Upon reviving he stated that he had been reading about rabies and the symptoms which would develop in man from the bite of a rabid dog, and insisted that he was developing hydrophobia. He was immediately sent to his home and the dog brought to the bureau to be kept under observation. Two days later the young man was in a very hysterical state and kept insisting that the dog that bit him was rabid. During this time the patient



LABORATORY, BUREAU OF ANIMAL INDUSTRIES.



APPLYING A MADSTONE.

had been in bed and seemed to have had marked par

**"Snatched, Growned and Snapped."**  
"He would roll himself over and over in bed, snarling, growling and snapping at the bed clothes. He would catch the pillow or sheet with his teeth and shake it like a ferocious shaking a rax and in numerous other ways would show more imitative accuracy than in the genuine disease. At first it was impossible to attract his attention, although he would mutter and talk to himself. When he was informed that the dog that bit him did not have rabies, that it was alive and well, and that even if it did develop rabies several weeks later, it would have no bearing on his case, as the saliva would not be virulent such a long period before the development of the symptoms in the dog, and furthermore that he had developed symptoms entirely too soon after the bite had been inflicted, as a longer period of incubation had to intervene for the virus to multiply and produce its effects, he commenced to realize that he had been making himself a victim of autosuggestion, and rapid recovery followed."

"Here was a typical case of lyssophobia or pseudo-rabies, a fragment of an overworked imagination, and, as in all cases of this class, recovery took place instead of death, which is always

the termination of the true disease."

**A Case of True Rabies.**  
And by way of contrast, the doctor described a case of true rabies, said he:

"Through the courtesy of Dr. William C. Woodward, health officer of the District of Columbia, I was invited to visit Freedmen's Hospital for the purpose of seeing a patient whose case had been diagnosed by the resident surgeon as suspected hydrophobia. The woman, twenty-eight years of age, had been severely attacked and severely bitten on the right forearm and about the face by a stray collie dog. Eighteen days later she complained of general malaise and pain in the wounds of the head, which rapidly grew more severe, necessitating the services of a physician, upon whose advice the patient was removed to the hospital on the following day. My visit occurred on the afternoon of the succeeding day, at which time the patient was in an extremely nervous condition, having an excessive feeling of fear and uneasiness. The eyes were staring and a general expression of anxiety pervaded her countenance. Her mind was clear and no efforts at violence were made. When interviewed as to the scars on her head and forearm, she lightly replied, 'Oh, a dog bit me there some weeks ago, but they are all right now.'"

"From time to time, reflex spasms involving the muscles used in swallowing were noticed, causing a clenching at the throat, and difficult breathing during the attack. These rapidly became more generalized and soon involved the respiratory muscles. Attempts at vomiting would then occur, but no evacuations followed. Contrary to the views of our skeptical friends, the patient accredited these symptoms to indigestion, and had not the slightest suspicion of the true nature of her condition, thus disproving the idea that the nervousness and fear usually seen in the early stages of rabies in the human subject are due to the natural dread of the disease, and apprehensive of the consequences, rather than to organic changes in the central nervous system. During the night these symptoms became more aggravated and spasms followed one another more rapidly, causing grave delirium. The patient finally became violent, requiring the adoption of forcible measures to keep her under control. Death occurred on the following morning, twenty-one days after the bite had been inflicted. On post-mortem examination no pathological lesions were found which could be held accountable for the symptoms which resulted in death, but histological examination as well as the inoc-

ulation or rabbits with an emulsion of the brain resulted in the confirmation of the diagnosis of hydrophobia."

**Is It Really Lockjaw?**  
That supposed rabies is in reality tetanus, or 'lockjaw,' is another charge which has been made by certain zealous champions of man's 'best friend.' As to this Dr. Mobler said:

"Tetanus may be readily differentiated from rabies by the persistence of muscular cramps, especially of the neck and abdomen, which causes these muscles to become set and hard as wood. In tetanus there is also an absence of a depraved appetite or of a wilful propensity to hurt other animals or damage the surroundings. The general muscular contraction gives the animal a rigid appearance, and there is an absence of paralysis which marks the advanced stage of rabies. The dumb form of rabies in dogs is characterized by the lower jaw, while in tetanus the jaws are locked. This locking of the jaws in horses is very characteristic, and in cattle or dogs it renders the animals incapable of bellowing or

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barking as in rabies. Finally, tetanus may be distinguished from rabies by the fact that the central nervous system does not contain the infectious principle, while in rabies the inoculation of test animals with the brain or cord of a rabid animal will produce tetanus after an interval of twenty to twenty days. This period of incubation is much longer than in tetanus, since the inoculation of rabbits with tetanus bacilli invariably results in death after a short period, usually within three or four days."

**Influence of Dog Days.**  
The introductory sentence of this article reflects one of the most widely believed of these fallacies.

"The idea is prevalent with many people," said Dr. Hart, a former member of the bureau, "that dogs are particularly liable to go mad during the so-called dog days, which extends from the first of July to the middle of August. These days are called 'dog days' because they cover the period of time when the dog star, Sirius, is above the horizon with the sun."

"They have no connection with the dog. On account of the clemency of the weather dogs probably travel about during this season more than in winter, and hence are slightly more liable to infection. Statistics, however, show that the disease is present throughout the year and seasons have very little, if any influence."

"It is commonly believed," added the doctor, "that a person bitten by a dog in perfect health is liable to become affected with hydrophobia should the dog develop rabies at any subsequent period, however long afterward. Consequently believers in this theory are particularly anxious to have the dog killed at once before he has had an opportunity to go mad. Nothing could be more fallacious and at variance with our knowledge of all infectious diseases, and the killing of the dog should always be discouraged."

"Until recently it was considered that the dog's saliva became virulent only three days before the appearance of symptoms of rabies. According to some recent experiments by Nicolas, it has been found that the saliva may become virulent six or eight days before the symptoms develop. Therefore in case the animal remains healthy for ten days after it has bitten the person or animal, no danger need be apprehended from the bite, even though the dog develop rabies with in the next few weeks."

**The Madstone Fallacy.**

"The curative value of the madstone is still devoutly believed in by a great many people in certain sections of the country. Within the last few years a madstone was forwarded to the department of the bureau, stating that it had prevented several cases of rabies and he was anxious for it to be tried by the bureau. Some of these madstones, properly called hair balls, are obtained from the stomachs of various wild and domestic animals. They are in some cases composed of matted hair, which the animal has licked from its body and swallowed; but in the majority of cases they consist of masses of vegetable fiber, such as the awns of clover and heads of grain, which have gradually collected over a considerable period of time and are formed into a spherical shape by the contraction of the gastric walls. Gallstones, intestinal calculi, and, in fact, any porous stones, may be used as madstones."

"After a person has been bitten the madstone is applied to the wound, and it is believed that the longer it adheres the more sure it is of preventing the disease. Whether it will stick or not depends entirely on the amount of hemorrhage or discharge from the wound. Where this is profuse the blood infiltrates the meshes of the madstone, soon coagulates or dries and tends to hold it in place, and it adheres for a considerable time under such circumstances. In these cases the virus is supposed to be removed and the treatment is heralded a success. On the other hand, where the wound is small and the discharge slight there is nothing to hold the stone in place and it immediately falls off. Certain of these madstones have been held in families for three or four generations and are guarded as carefully as any heirloom. Cases have been known where people have made long journeys to have large sums of money to have a madstone applied. Its specific value against rabies is no greater than that of a piece of blotting paper applied in the same manner. The application of madstones gives the unwarranted belief in a false sense of security, and their use should be discouraged by all possible means."

"The 'madstone' in the photograph illustrated herewith is in a collection, illustrating the superstitions of madmen, some time ago installed in the National Museum. By permission of the curator, Medical Director James M. Flint, U. S. N., I here had it photographed."

**Water Fear a Myth.**  
"It is commonly believed that mad dogs will not go near water," added Dr. Hart. "And in case such an animal is taken to ford a creek or lake, this is taken as proof that he did not have rabies."

"This fear of water is a symptom usually marked in human cases, but is never present in the dog at any stage of the disease. Animals in the early stages when running about the country will cross bodies of water without the slightest fear. Even after the throat becomes completely paralyzed the animal will often constantly attempt to drink water from a pail or bucket if placed within its reach. Such behavior is the result of the paralysis of the throat muscles, swallowing is impossible."

"After a person is bitten by a dog it frequently occurs that some friend will immediately look into the mouth of the animal in case the mucous membrane is broken, he will at once conclude that the bite is dangerous, even though the dog appears perfectly normal, but if the mouth happens to be red, he thinks there is no danger from the bite. This is entirely erroneous. The color of the mouth is due to a normal deposit of pigment in the mucous membrane of the mouth. It is present in a certain percentage of all dogs and has no connection with rabies."

**True Symptoms of Rabies.**  
But what are the true signs of hydrophobia which you have to look out for in a dog, you are wondering. Dr. Hart sums them up in these few words: "The important symptoms, any one of which when well worked should render the dog suspicious and lead to its

being confined, are: Change in disposition, alteration of voice, inability to swallow, leaving home and returning in an exhausted and emaciated condition, paralysis of the jaw, swallowing abnormal substances as wood, stones, etc."

A most complete laboratory for diagnosing rabies in suspected animals is part of the equipment of the bureau of animal industry. Many heads of suspects are here received from veterinarians and physicians each year, and as soon as one arrives at the laboratory parts of the brain are removed and examined under the microscope for certain little spots or bodies discovered nine years ago by Professor Negri of the Italian University of Pavia to be present in the nerve cells of the brains of rabid animals. They have since been discovered in from 90 to 95 per cent. of all established cases of rabies that have been investigated. At the same time the old test, that of inoculating rabbits with tissue from the suspected brain, is made. The newer test is, however, the surer and quicker, giving an absolute diagnosis within a few hours, whereas that with the rabbits requires ten or twelve days and is valuable only as a check upon the other process."

**What Might Have Been.**  
The practical importance of the new test was thus described by Dr. Schroeder:

"A number of years ago a local physician informed me by telephone that he had under treatment an elderly woman because she had been severely bitten by her pet dog, which had suddenly and without apparent cause become so surly, morose and irritable that it was necessary to kill it. I told the physician to send the dog's body to me so that I could obtain material from it to make a test inoculation for rabies. The body was sent, and I took out the brain and used small portions of it to inoculate two rabbits."

"The rabbits became affected with typical rabies and died on the seventeenth day after inoculation. When I called upon the physician to inform him that the diagnosis of rabies was complete and to advise him to send his patient to a Pasteur Institute for treatment as soon as possible, he told me in a very frank manner that he did not need my information and that his patient was beyond Pasteur and all other treatment; that she had died of rabies four days earlier than my test rabbits, and that she had suffered agonies such as he hoped never to witness again."

"The woman died on the thirteenth or fourteenth day after she was bitten; the bites were inflicted on her face, neck and arms. Had the bodies of Negri been known then as they are known now, it could have been determined on the same day the dog was killed that he was affected with rabies, and his mistress would have resorted to Pasteur treatment without loss of time and would thus have escaped a terrible death."

Speedy recourse to the Pasteur treatment, first advocated by the great French bacteriologist of that name in 1885, is recommended by the bureau's specialists to all victims of animals found by their laboratory tests to have been rabid. One of the accompanying photographs shows a patient receiving the treatment. It has been furnished to me by a well known bacteriologist, regularly engaged in this work.

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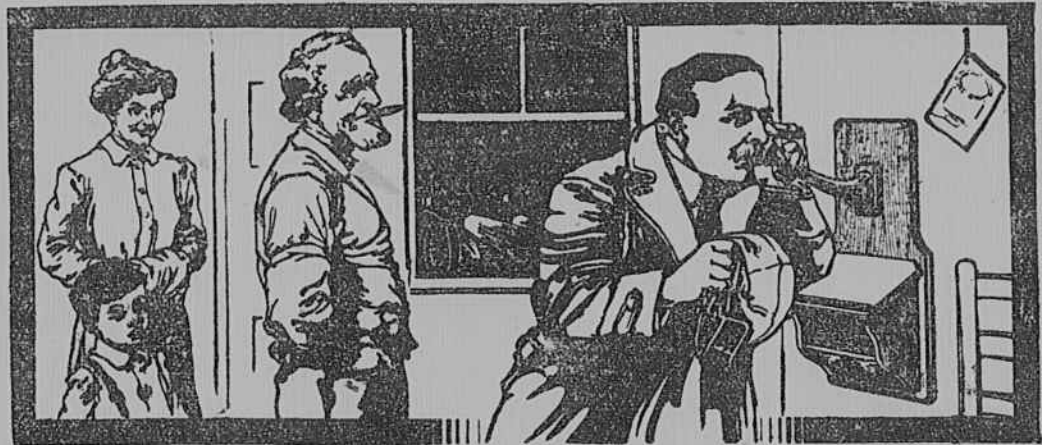
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